

# Internal Phosphorus Loading in Prospect Park Lake



Claire Stevens

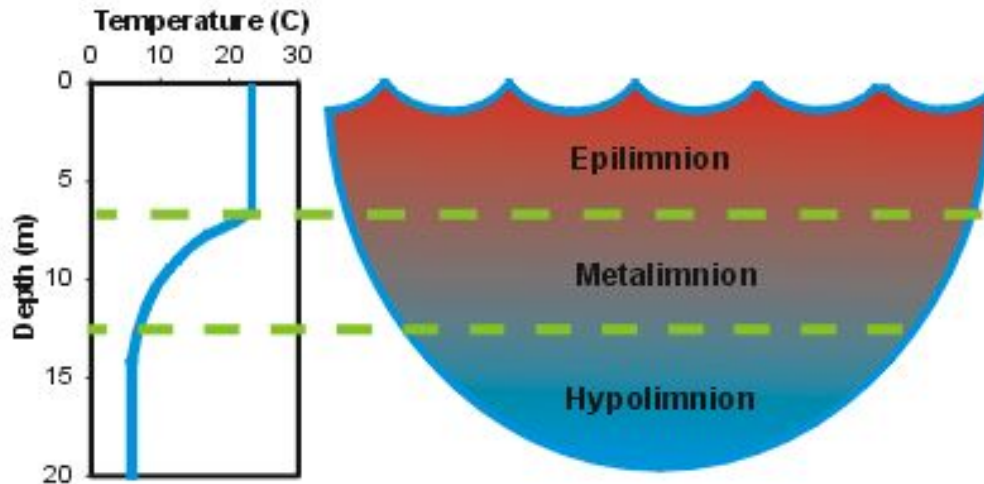
# An Introduction to Shallow Lakes

## Deep Lakes...

- Seasonal thermal stratification
- Slower changes

## Shallow Lakes...

- Weekly - daily thermal stratification
- Quicker changes



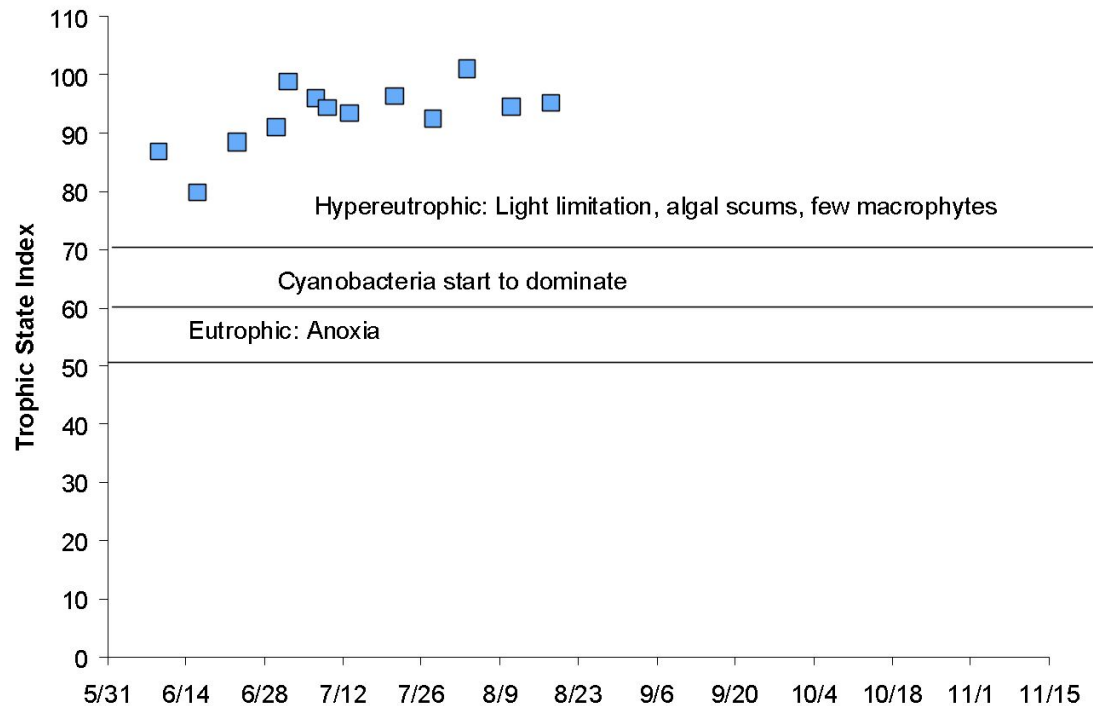
# Prospect Park Lake: A Brief History

- Shallow and man-made
  - Depth of 1.64 m
- Orthophosphates in the water column

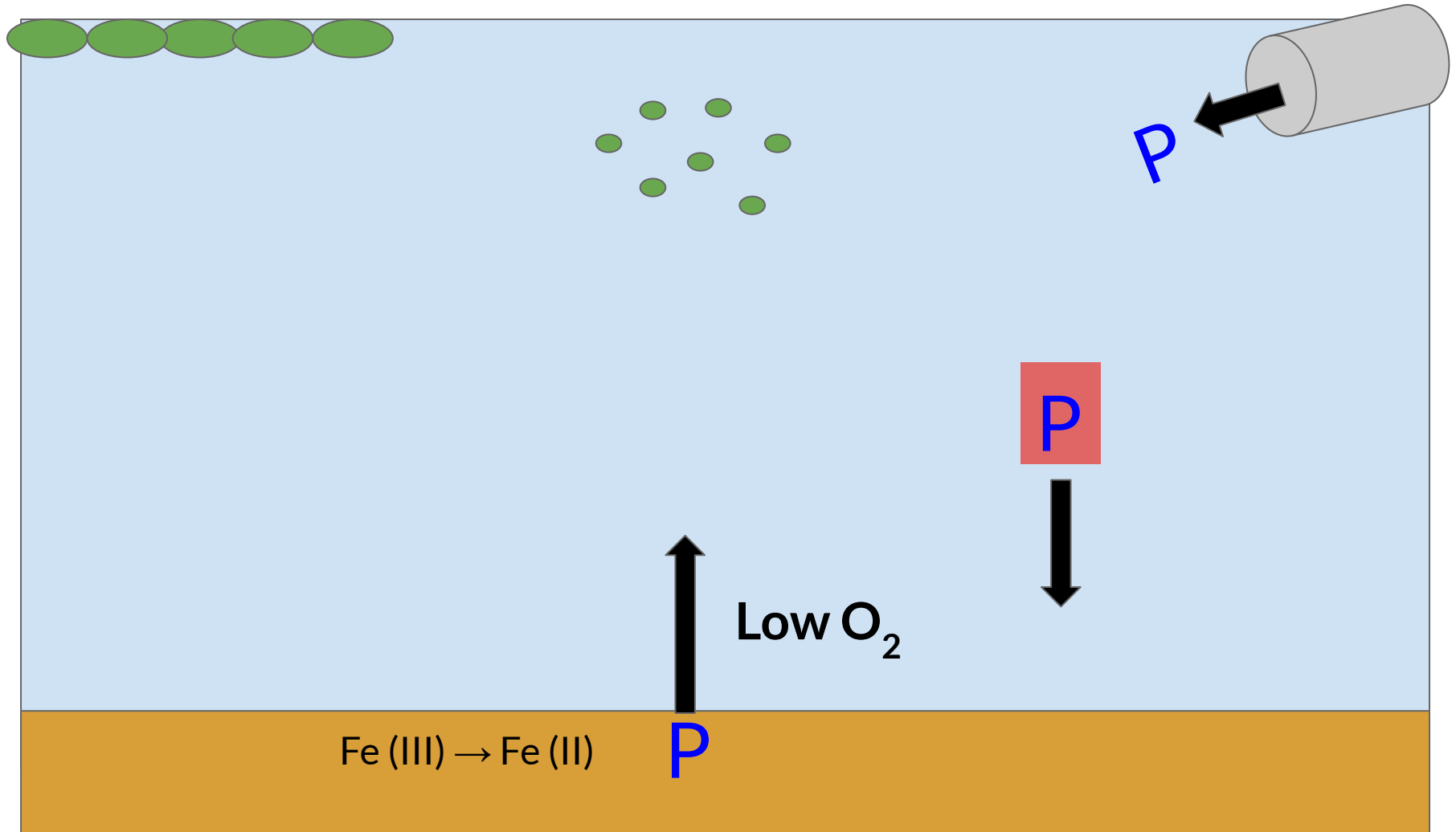


# The Phosphorus Problem

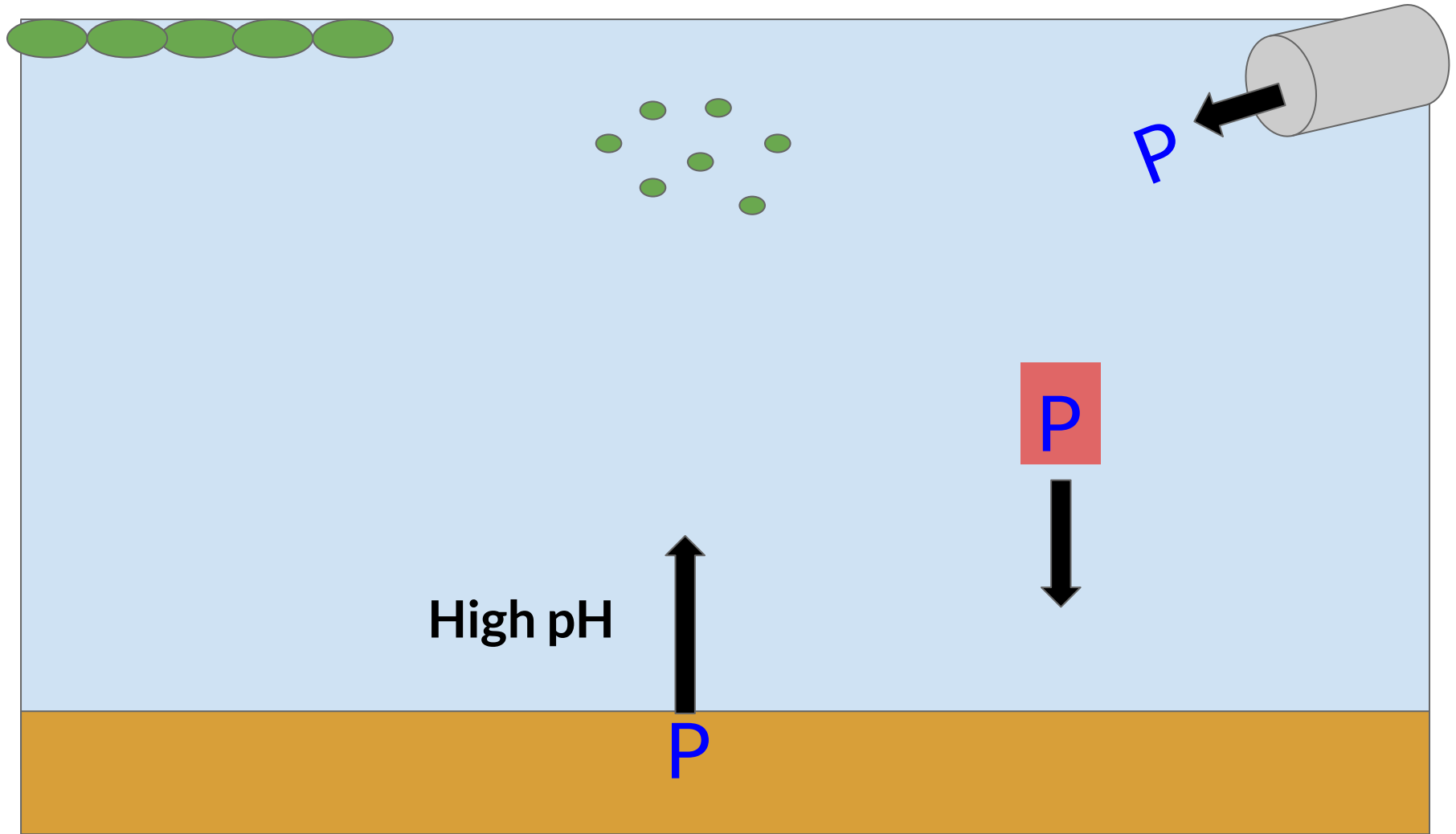
- Phosphorus loading = **eutrophication**
- Increase in P  $\Rightarrow$  increase in algal blooms
  - Cyanobacteria and Microcystis
- Increase in algal blooms  $\Rightarrow$  hypoxia or anoxia



# Internal Phosphorus Loading

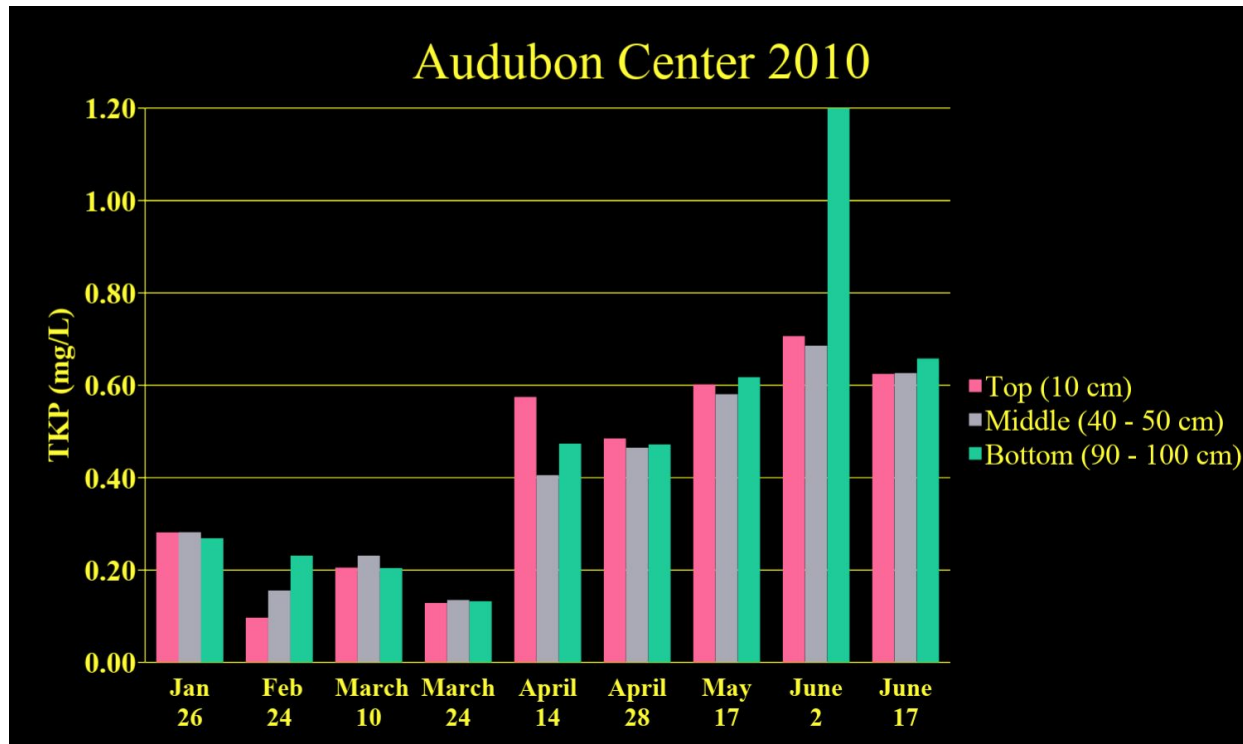


# Internal Phosphorus Loading

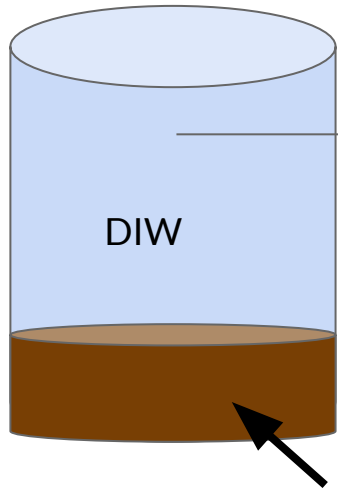


# My Project

- “Most probable” explanation for P increase in summer months is release from sediments
- Effects of low oxygen on SRP release from sediments in Prospect Park Lake



# Methodology



Initial and final:

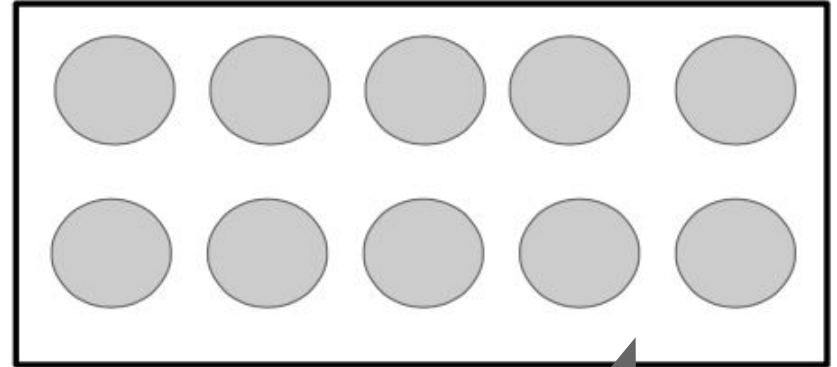
- Soluble reactive phosphorus
- pH
- Oxygen
- Temperature
- Chlorophyll a

Prospect Park Lake sediments

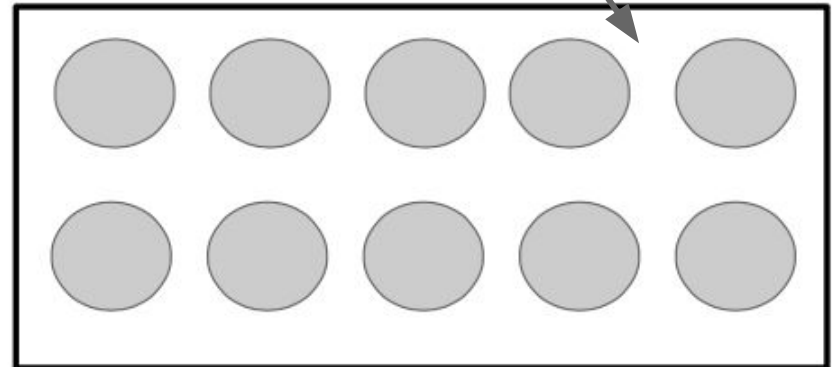
Characteristics:

- Soluble reactive phosphorus
- Grain size analysis
- Porosity
- Organic matter content

Anoxic (no aeration)



Oxic (aeration)

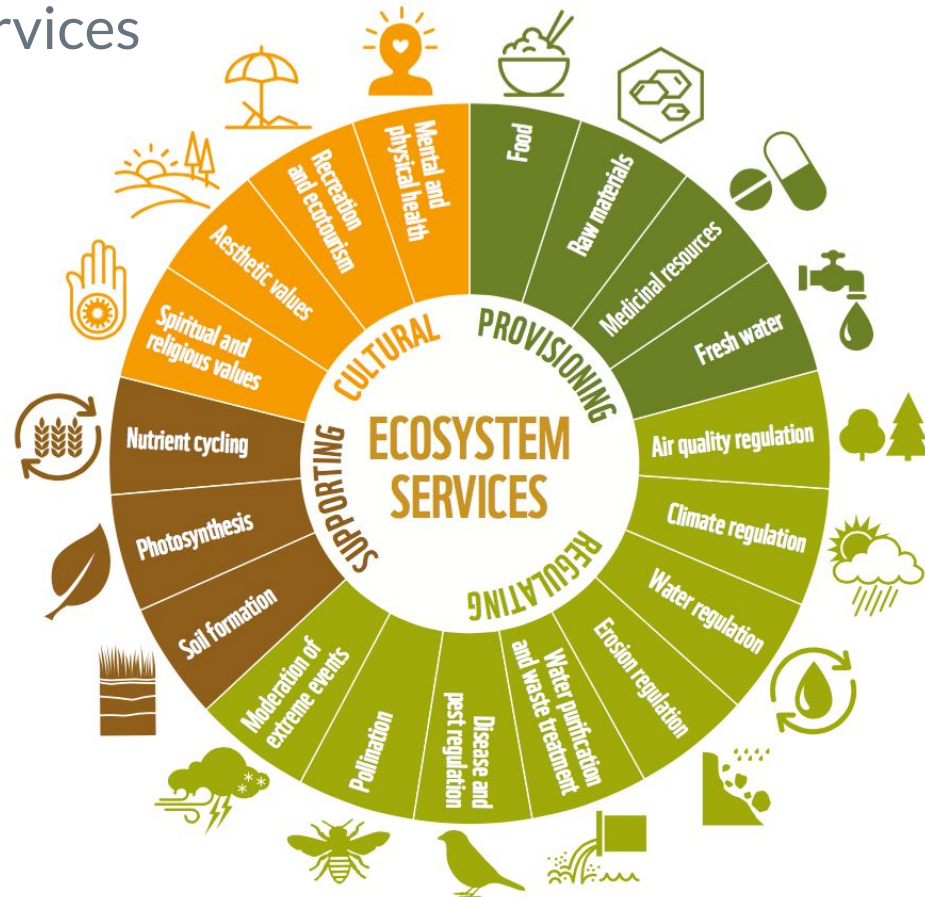


Water bath (T control)



# Why is this relevant?

- Management
- Ecosystem Services



# Works Cited

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Liu, Y., Cheng, Z.Q., Branco, B.F. and Marra, J.F. (2017) Speciation and Mobility of Phosphate in the Eutrophic Ponds at Prospect Park, Brooklyn, New York, USA. *Journal of Geoscience and Environment Protection*, 5, 26-36.

Ruban, V., López-Sánchez, J. F., Pardo, P., Rauret, G., Muntau, H., and Quevauviller, Ph. (1999) Selection and evaluation of sequential extraction procedures for the determination of phosphorus forms in lake sediment. *Journal of Environmental Monitoring*, 1, 51-56.

Scheffer, Martin. *Ecology of Shallow Lakes*, Kluwer Academic Publishers, 2004.